REMARKS

Status of Claims

Claims 1, 2, 7-11, 14, 15, 18, 19 and 23-28 are pending in the application

Claims 1 and 8 are amended to recite that the wave peaks of the wave shape are presented on the exposed outer surface of the transport pipe, in view of the Examiner's recommendation to add "specific claim language such would not exclude there being an additional sleeve over this portion" (Examiner's Response to Arguments).

Applicants also amend independent claims 1 and 8 by adding the feature that the reinforcing jacket is formed by a fiber structure (claim 7), wherein the fiber structure includes axially laid cross plies and / or radially laid circumferential plies or tiers (specification as published, paragraph [0020]).

Claim Rejections - 35 USC § 103

Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Oldham (FR 2197140) in view of Blin.

Applicants respectfully traverse.

Present claim 1 requires at least one ***joint element*** (12) which includes

- a radially extending ***collar*** (16) and
- a ***ring sleeve*** (18) concentric to the inner pipe (10) extending axially from one side thereof, wherein (a) wave peaks of a wave shape (emanating from the ring sleeve) are presented on the outer surface of the transport pipe, and (b) sequential wave peaks (38) of the ring sleeve (18) exhibit a ***decreasing radial height*** going towards the free end of the ring sleeve (18).

The pipe couplers illustrated in the cited references are very different from, and provide no suggestion for, the presently claimed coupler.

Oldham teaches a hose-end with integrated flange, wherein a wire (25) is wound about protective material layers in the manner of a helix. The function of the wire is to discharge any

static charge in the hose. The end of the wire is connected to an electrical conductor (26, 27) and is hard soldered to flange (11). Another possible function of the wire wound about the hose is to prevent collapse of the hose in the case of vacuum. Oldham thus has no joint element with flange and ring sleeve, wherein the ring sleeve has a wave shape. Further, since the wire wrapping of Oldham is of constant diameter, there is no ring sleeve (18) with sequential wave peaks (38) exhibiting ***decreasing radial height*** going towards the free end of the ring sleeve (18).

Turning to Blin et al., this reference does not disclose that the wave peaks of the wave shape are arranged on an ***outer surface*** of the transport pipe. According to Blin et al. a hose is arranged between a metal end-fitting and a metal bush. The metal end-fitting and the bush are formed with a series of successive teeth. The hose is fastened by the teeth so that the coupler has a better mechanical resistance to pressure surges.

Applicants point out that claims 1 and 8 have been amended to recite that the wave peaks of the wave shape are presented on the exposed outer surface of the transport pipe, in view of the Examiner's recommendation to add "specific claim language such would not exclude there being an additional sleeve over this portion" (see Examiner's Response to Arguments).

In contrast, the transport pipe according to claims 1 and 8 comprises wave peaks at an outer surface of the transport pipe. Hereby, an optimal form fitting between the ring sleeve and an outside line reinforcement jacket is provided so that even with high axial stresses or loads no longitudinal enlarging of the transport pipe is to be feared. There is no hint in Blin et al. or the other prior art documents to provide this feature.

As explained in paragraph [0018] of the specification:

> In the exemplary embodiment illustrated in Figs. 1, 2 and 3 ... The wound carbon fiber line is form-locking and form-fittingly joined with the wave shaped outer surface **34** of the ring sleeve **18**. On its free end **36** away from the collar **16** the ring sleeve terminates tapered, so that a shallow transition is enabled for the wound reinforcing jacket **14** (see Fig. 3). Further, the outer wave contour **38** of the ring sleeve **18** becomes more shallow going towards its free end. The sequentially following wave peaks **38** of the wave contour **38** exhibit a decreasing radial height going towards the free end of the ring sleeve **18**. Directly at the collar **16** there is joined or connected a sharp-edged radial returning wave valley **40**, to which are joined, going to the free end **36** of the ring sleeve, two wave peaks **38** separated from each other by a further wave valley **42**. Therefrom there results an optimal form fitting between ring sleeve **18** and outside lying

reinforcing jacket **14**, so that even with high axial stresses or loads no longitudinal enlargening of the transport pipe is to be feared.

There is no teaching which would permit these references to be combined. There is no teaching of the structure presently claimed.

Accordingly, withdrawal of the rejection is respectfully requested.

Next, claims 1 and 2 are rejected under 35 U.S.C. §103(a) as being obvious over Oldham (FR 2197140) in view of Fischerkeller.

Applicants respectfully traverse.

Oldham teaches a hose-end with integrated flange, wherein a static discharge wire (25) is wound about protective material layers in the manner of a helix. Oldham has no joint element with ***flange and ring sleeve***, wherein the ring sleeve has a wave shape. Further, since the wire wrapping of Oldham is of constant diameter, there is no ring sleeve (18) with sequential wave peaks (38) exhibiting ***decreasing radial height*** going towards the free end of the ring sleeve (18).

According to the Examiner, Fischerkeller discloses a pipe comprising a tube structure 20 provided with a ring sleeve 10 having sequential wave peaks 14 and a decreased radial height wave peak.

In response, Applicants point out that the present claim 1 concerns a transport pipe for ***high viscosity materials*** requires at least one ***joint element*** (12) which includes

- a radially extending ***collar*** (16) and
- a ***ring sleeve*** (18) concentric to the inner pipe (10) extending axially from one side thereof, wherein (a) wave peaks of a wave shape (emanating from the ring sleeve) are presented on the outer surface of the transport pipe, and (b) sequential wave peaks (38) of the ring sleeve (18) exhibit a ***decreasing radial height*** going towards the free end of the ring sleeve (18).

Fischerkeller teaches a fuel line, which is obviously not designed for transport of high viscosity materials.

Neither Oldham nor Fischerkeller teach the elements of a joint element as presently claimed. Applicants find no "joint element" in Fischerkeller, at least no joint element having a

flange. As defined in claim 27, the joint element is metal. No such metal joint element is shown in Fischerkeller. Further, in the present invention, the wave peaks decrease going to the free end of the joint, i.e., ***away*** from the joint, away from the flange. In Fischerkeller the wave peaks decrease going ***towards*** the joint.

There is no way to combine the teachings of Oldham with Fischerkeller to reach the present invention. Accordingly, withdrawal of the rejection is respectfully requested.

Next, claims 8-11, 18, 19, and 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Montaron (EP 266810) in view of Blin.

Applicants respectfully traverse.

Present claim 8 requires at least one ***joint element*** (12) which includes

- a radially extending ***collar*** (16) and
- a ***ring sleeve*** (18) concentric to the inner pipe (10) extending axially from one side thereof, wherein (a) wave peaks of a wave shape (emanating from the ring sleeve) are presented on the outer surface of the transport pipe, and (b) sequential wave peaks (38) of the ring sleeve (18) exhibit a ***decreasing radial height*** going towards the free end of the ring sleeve (18)

Present claim 8 further requires a reinforcing jacket (14) formed by a fiber structure impregnated in a plastic matrix.

As conceded by the Examiner, Montaron does not teach forming the ring sleeve with a wave shape running in the axial direction, and where the sequential wave peaks of the ring sleeve exhibit a decreasing radial height going towards the free end of the ring sleeve, where the wave peaks of the wave shape are presented on the outer surface of the transport pipe.

Blin et al are cited for teaching the deficiencies. However, Blin et al., do not disclose that the wave peaks of the wave shape are arranged on an ***outer surface*** of the transport pipe. According to Blin et al. a hose is arranged between a metal end-fitting and a metal bush. The metal end-fitting and the bush are formed with a series of successive teeth. The hose is fastened by the teeth so that the coupler has a better mechanical resistance to pressure surges.

Accordingly, this combination of teachings does not reach the present invention. Withdrawal of the rejection is respectfully requested.

Claims 8-11, 18, 19, and 23-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Montaron (EP 266810) in view of Fischerkeller.

Applicants respectfully traverse.

As conceded by the Examiner, Montaron does not teach forming the ring sleeve with a wave shape running in the axial direction, and where the sequential wave peaks of the ring sleeve exhibit a decreasing radial height going towards the free end of the ring sleeve, where the wave peaks of the wave shape are presented on the outer surface of the transport pipe.

Fischerkeller teaches a fuel line, which is obviously not designed for transport of high viscosity materials. Applicants find a joint end of a fuel line but no "joint element" in Fischerkeller, at least no joint element having a flange. As defined in claim 27, the joint element is metal. No such metal joint element is shown in Fischerkeller. Further, in the present invention, the wave peaks decrease going to the free end of the joint, i.e., ***away*** from the joint, away from the flange. In Fischerkeller the wave peaks decrease going ***towards*** the joint.

Accordingly, for all the technical reasons discussed above, these references can not be combined, and the combination of teachings does not provide suggestion for the present invention. Withdrawal of the rejection is respectfully requested.

Next, claims 8-11, 18, 19, and 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klein (DE 1932448) in view of Blin.

According to the Examiner, Klein discloses all of the recited structure with the exception of forming the ring sleeve ***with a wave shape*** running in the axial direction, and where the sequential ***wave peaks of the ring sleeve exhibit a decreasing radial height*** going towards the free end of the ring sleeve, where the wave peaks of the wave shape are presented on the outer surface of the transport pipe.

Accordingly, as conceded by the Examiner, Klein does not disclose any of the characterizing features of the present invention.

Blin is cited for disclosing the recited pipe comprising a multilayered tube structure 5 provided with a ring sleeve 2 having sequential wave peaks 10 and a decreased radial height wave peak near 20a going towards the free end of the ring sleeve.

In response, Applicants point out that claims 1 and 8 have been amended to recite that the the wave peaks of the wave shape are presented on the exposed outer surface of the transport pipe, in view of the Examiner's recommendation to add "specific claim language such would not exclude there being an additional sleeve over this portion" (Examiner's Response to Arguments).

Accordingly, this combination of references does not reach the present claims. Withdrawal of the rejection is respectfully requested.

Claims 8-11, 18, 19, and 24-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klein (DE 1932448) in view of Fischerkeller.

The reference to Klein discloses all of the recited structure with the exception of forming the ring sleeve with a wave shape running in the axial direction, and where the sequential wave peaks of the ring sleeve exhibit a decreasing radial height going towards the free end of the ring sleeve, where the wave peaks of the wave shape are presented on the outer surface of the transport pipe. Accordingly, as conceded by the Examiner, Klein does not disclose any of the characterizing features of the present invention.

Fischerkeller teaches a fuel line, which is obviously not designed for transport of high viscosity materials. Applicants find a joint end of a fuel line but no "joint element" in Fischerkeller, at least no joint element having a flange. As defined in claim 27, the joint element is metal. No such metal joint element is shown in Fischerkeller. Further, in the present invention, the wave peaks decrease going to the free end of the joint, i.e., ***away*** from the joint, away from the flange. In Fischerkeller the wave peaks decrease going ***towards*** the joint.

Thus, Fischerkeller and Klein can not be combined, or if some suggestion could be found to modify a transport pipe for viscous materials with a design of a connecting end of a fuel line, the product would be a transport pipe with a joining element with peaks decreasing in the direction of the joint, not decreasing going towards the free end (i.e., away from the flange end) as presently claimed.

Accordingly, for all the technical reasons discussed above, these references can not be combined, and the combination of teachings does not provide suggestion for the present invention. Withdrawal of the rejection is respectfully requested.

Claims 1, 2, 7-11, 14, 15, 18, 19, and 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over McLarty (US 3,537,484) in view of Blin.

According to the Examiner McLarty discloses a transport pipe capable of use with concrete, comprising an inner pipe of ***abrasion resistant plastic*** 1. McLarty is cited for disclosing all of the recited structure with the exception of what materials are used such as polyurethane, providing pins or bolts to hold the parts together, and ***forming the waves of decreasing outer extent*** and ***providing more than one wave***,

Thus, the most important features of the present invention are admitted by the Examiner not to be disclosed in McLarty.

Applicants point out that the present claim 1 concerns a transport pipe for high viscosity materials requires at least one ***joint element*** (12) which includes

- a radially extending ***collar*** (16) and
- a ***ring sleeve*** (18) concentric to the inner pipe (10) extending axially from one side thereof, wherein (a) wave peaks of a wave shape (emanating from the ring sleeve) are presented on the outer surface of the transport pipe, and (b) sequential wave peaks (38) of the ring sleeve (18) exhibit a ***decreasing radial height*** going towards the free end of the ring sleeve (18).

McLarty simply deposits quantities of filler material (3) around the exterior of a pipe (1). The filler material, the pipe, and the flange (6) are three separate elements. There is no teaching of on joint element comprising collar and ring sleeve. McLarty is thus far from the present invention.

Applicants further point out that one essential point of the invention is that the transport pipe comprises a fiber structure. The fiber structure, in particular the fiber strands, may be adapted to the outer surface / form of the transport pipe. Therefore, Applicants amend independent claims 1 and 8 by adding the feature that the reinforcing jacket is formed by a fiber

structure (claim 7), wherein the fiber structure includes axially laid cross plies and / or radially laid circumferential plies or tiers (published specification paragraph [0020].

McLarty has no teaching of such a fiber structure.

McLarty relates to a filament-wound pipe, comprising a hump formed by a filler material. The proposed filament-wound pipe further comprises an annular plastic liner (1) forming the inside surface of the known pipe, and filaments (2), helically wound about the plastic liner (1) (see Fig. 1 and / or column 3, lines 7 - 10). The filaments (2) are constructed of fiber glass and are coated with an epoxy resin (see column 3, lines 10 - 13). The filament windings are substantially circular (see column 3, line 33 or line 43). Thus, the technical teaching of McLarty is to provide a pipe, which is helically over wound by fiber glass filaments coated with epoxy resin.

In contrast to the technical teaching of McLarty, the transport pipe according to the amended claims 1 and 8 comprises a fiber structure, wherein the fiber structure includes axially laid cross plies and / or radially laid circumferential plies or tiers. This allows adjusting the fiber structure to the outer wave-form of the reinforcing jacket of the transport pipe. For example, it is possible to arrange the fiber strands parallel and / or perpendicular to the axis of the transport pipe. For decreasing the abrasion and for increasing the stability of the transport pipe it is proposed to arrange the fiber strands parallel to the axis of the pipe on the wave crests and perpendicular to the axis in the wave troughs. There is no hint in McLarty to provide such feature.

Turning next to Blin, this reference is cited for disclosing the recited pipe comprising a multilayered tube structure 5 provided with a ring sleeve 2 having sequential wave peaks 10 and a decreased radial height wave peak near 20a going towards the free end of the ring sleeve.

In response, Applicants point out that claims 1 and 8 have been amended to recite that the the wave peaks of the wave shape are presented on the exposed outer surface of the transport pipe, in view of the Examiner's recommendation to add "specific claim language such would not exclude there being an additional sleeve over this portion" (Examiner's Response to Arguments).

Accordingly, for all the technical reasons discussed above, these references can not be combined, and the combination of teachings does not provide suggestion for the present invention. Withdrawal of the rejection is respectfully requested.

Claims 1, 2, 7-11, 14, 15, 18, 19, and 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over McLarty in view of Fischerkeller.

The Examiner concedes that McLarty fail to disclose what materials are used such as polyurethane (pu), providing pins or bolts to hold the parts together, and forming the waves of decreasing outer extent and providing more than one wave, however these are considered merely choices of mechanical expedients.

Applicants respectfully traverse.

As explained in paragraph [0043] of the published application, the joint element exhibits on the ring sleeve 18 an axially wave-shaped outer surface 34. On its free end 36 away from the collar 16 the ring sleeve terminates tapered, so that a shallow transition is enabled for the wound reinforcing jacket 14 (see FIG. 3). Further, the outer wave contour 38 of the ring sleeve 18 becomes more shallow going towards its free end. The sequentially following wave peaks 38 of the wave contour 38 exhibit a decreasing radial height going towards the free end of the ring sleeve 18. Therefrom there results an optimal form fitting between ring sleeve 18 and outside lying reinforcing jacket 14, so that even with high axial stresses or loads no longitudinal enlargening of the transport pipe is to be feared.

Fischerkeller teaches a fuel line, which is obviously not designed for transport of high viscosity materials. Applicants find a joint end of a fuel line but no "joint element" in Fischerkeller, at least no joint element having a flange. As defined in claim 27, the joint element is metal. No such metal joint element is shown in Fischerkeller. Further, in the present invention, the wave peaks decrease going to the free end of the joint, i.e., ***away*** from the joint, away from the flange. In Fischerkeller the wave peaks decrease going ***towards*** the joint.

Significantly, the present claimed transport pipe has a combination of:

(1) a reinforcing jacket (14) enclosing at least the internal pipe and connected thereto and to the joint element (12), wherein the reinforcing jacket (14) is formed by a fiber

structure impregnated in a plastic matrix, and wherein the fiber structure includes axially laid cross plies and/or radially laid circumferential plies or tiers, and

(2) at least one ***joint element*** (12) which includes

- a radially extending ***collar*** (16) and
- a ***ring sleeve*** (18) concentric to the inner pipe (10) extending axially from one side thereof, wherein (a) wave peaks of a wave shape (emanating from the ring sleeve) are presented on the outer surface of the transport pipe, and (b) sequential wave peaks (38) of the ring sleeve (18) exhibit a ***decreasing radial height*** going towards the free end of the ring sleeve (18).

This combination of reinforcing jacket and joint element is not taught or suggested in these references read alone or in combination.

Accordingly, for all the technical reasons discussed above, these references can not be combined, and the combination of teachings does not provide suggestion for the present invention. Withdrawal of the rejection is respectfully requested.

Response to Arguments

The Examiner advises that Applicant's arguments filed December 17, 2010 have been fully considered but they are not persuasive. With respect to Blin, the waves do extend to the outside layer of the pipe as seen in figure 2, and without more specific claim language such would not exclude there being an additional sleeve over this portion, however, such is also moot in light of the new prior art to Fischerkeller which also teaches this feature, and where 14a has it's corner shaved down which would make it a shorter wave than the other waves 14 thereby meeting the rest of the structure missing from the prior art.

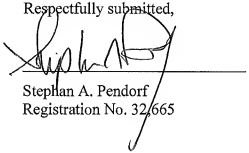
In response, Applicants appreciate the suggestion, and amend claims 1 and 8 to recite that the waves are on the exposed outer surface, thus excluding an additional sleeve over this portion.

Accordingly, withdrawal of the rejection and early issuance of the notice of allowance is respectfully requested.

The Commissioner is hereby authorized to charge any fees which may be required at any time during the prosecution of this application without specific authorization, or credit any overpayment, to Deposit Account Number 16-0877.

Should further issues remain prior to allowance, the Examiner is respectfully requested to contact the undersigned at the indicated telephone number.

Respectfully submitted,



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